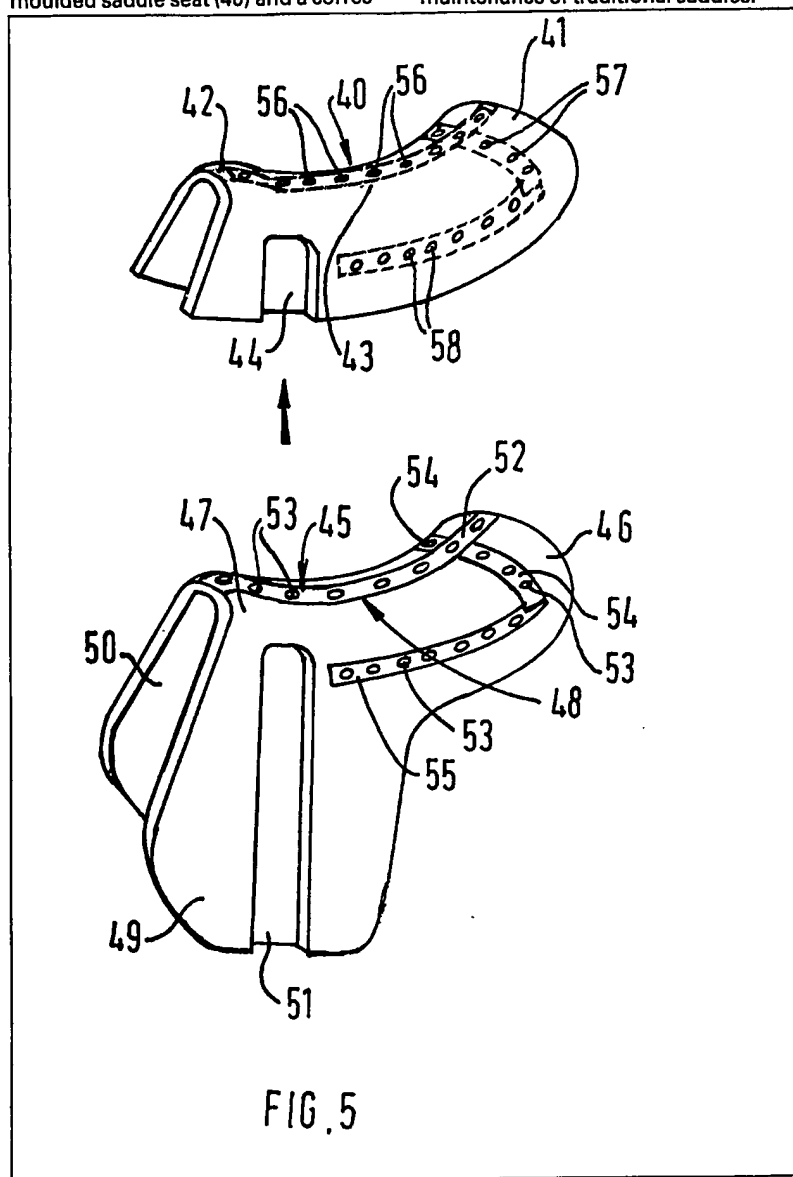


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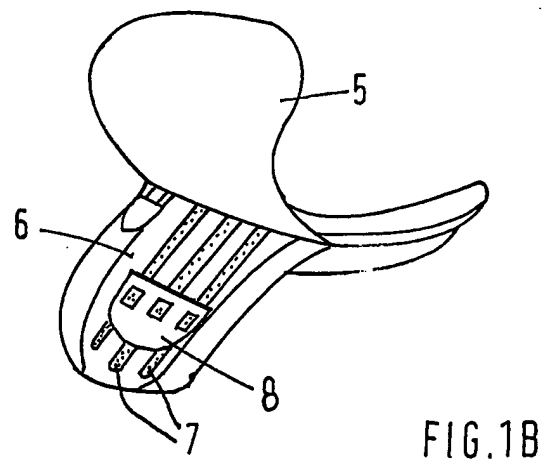
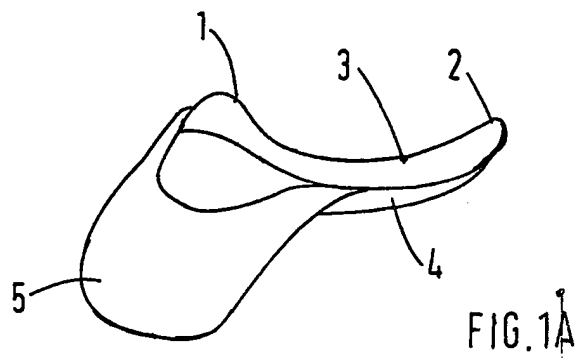
(54) Riding saddle

(57) The invention provides a riding saddle in the form of an integrally moulded saddle seat (40) and a corres-

ponding synthetic foam padded panel (45). Seat and panel are releasably attachable together by means located to lie within the periphery of the underside of the seat. Example attachment means are rows of press-studs (53, 56, 57, 58) and the attachment means preferably extend along the longitudinal centre line of the saddle. Interchangeable combinations of seats and panels give versatility of fittings while avoiding the expense of manufacture and maintenance of traditional saddles.



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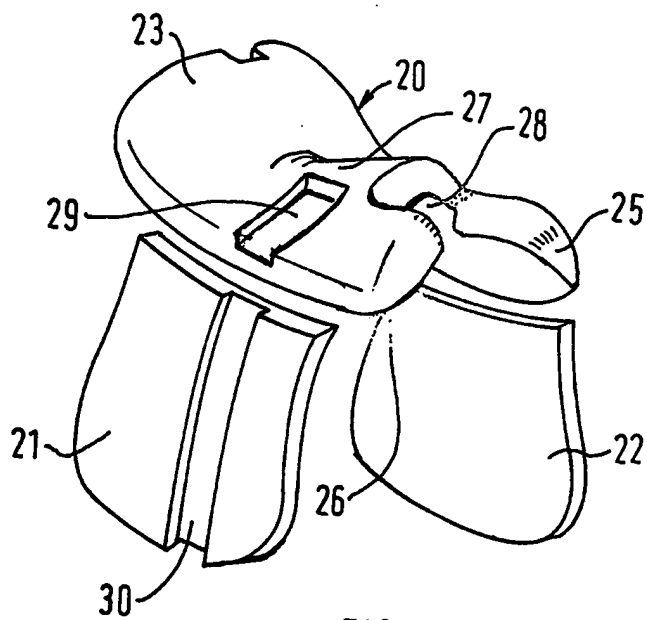
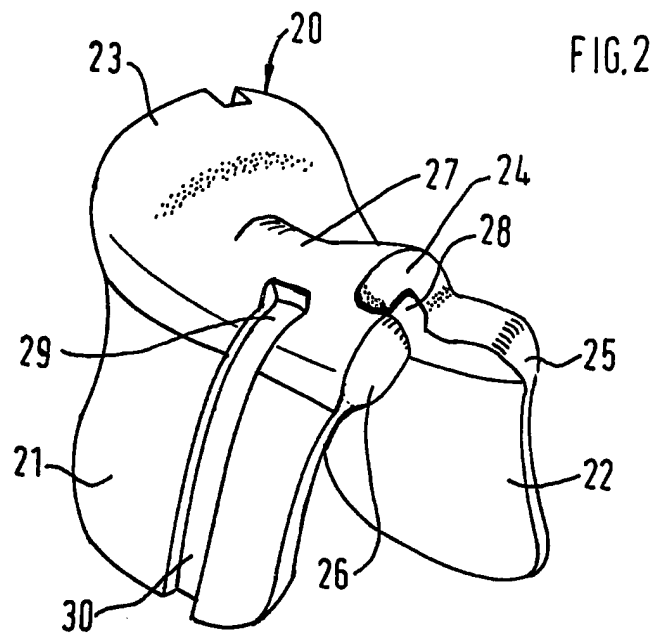


FIG. 3

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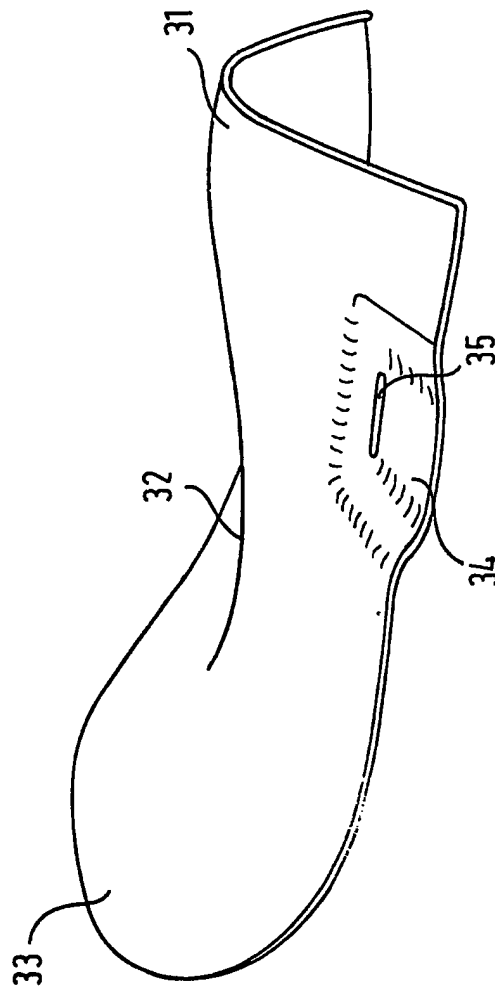


FIG. 4

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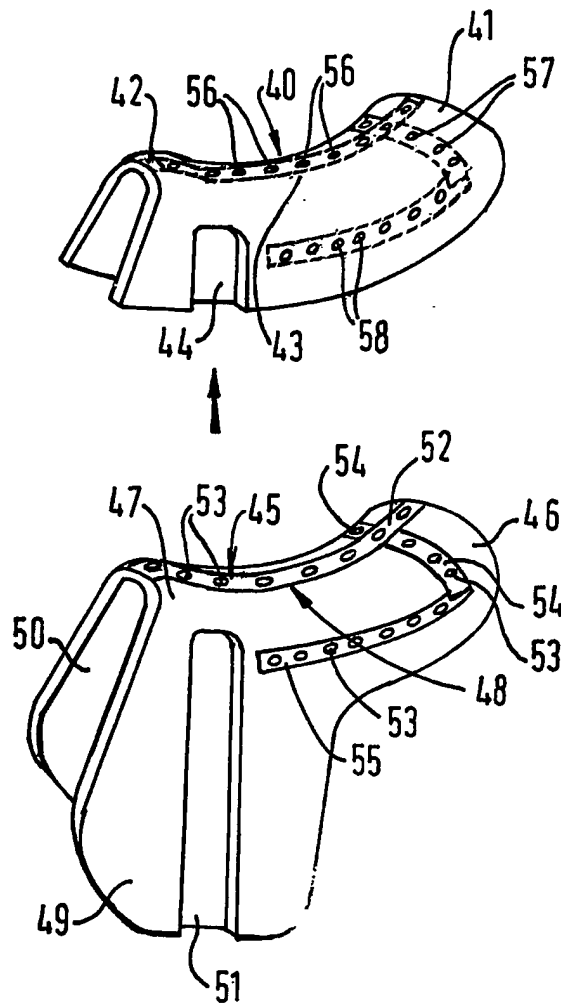


FIG. 5

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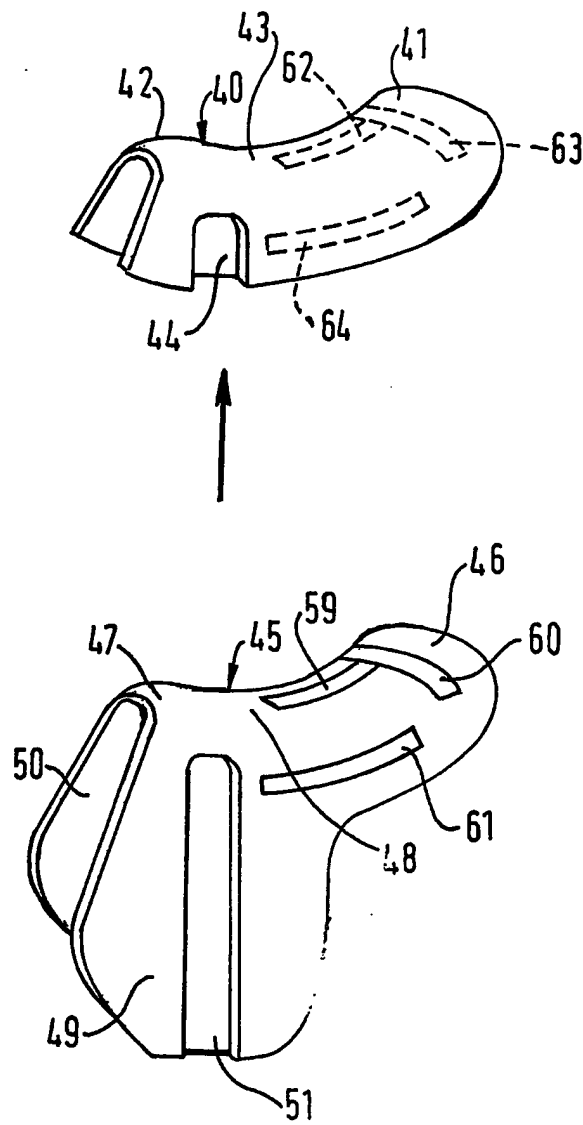


FIG.6

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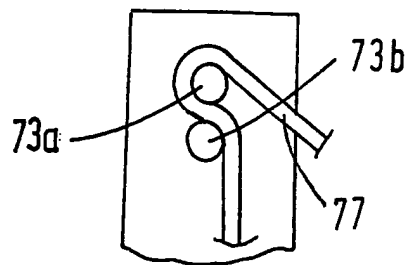


FIG. 9

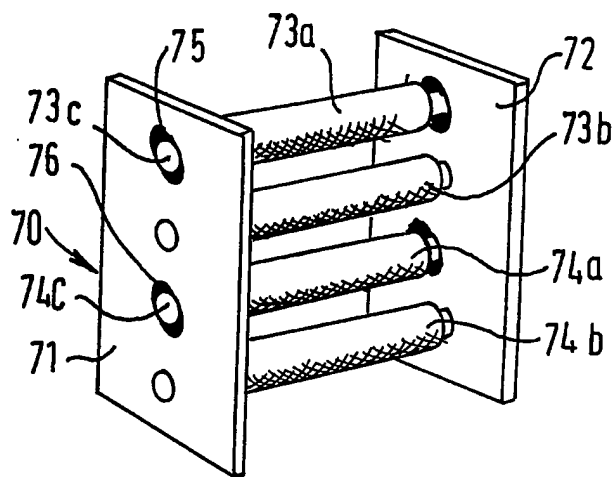


FIG. 7

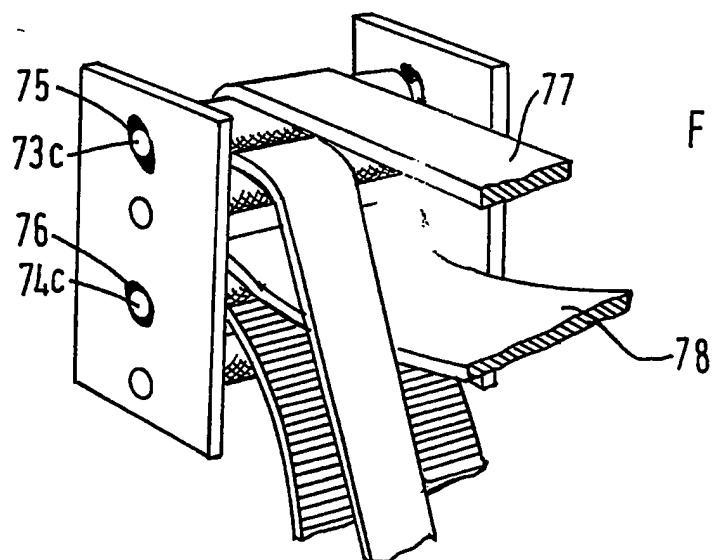


FIG. 8

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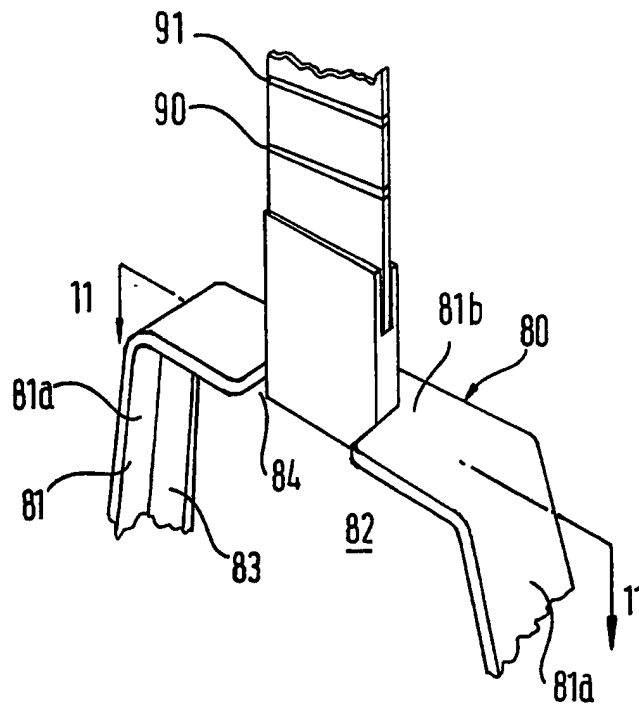


FIG. 10

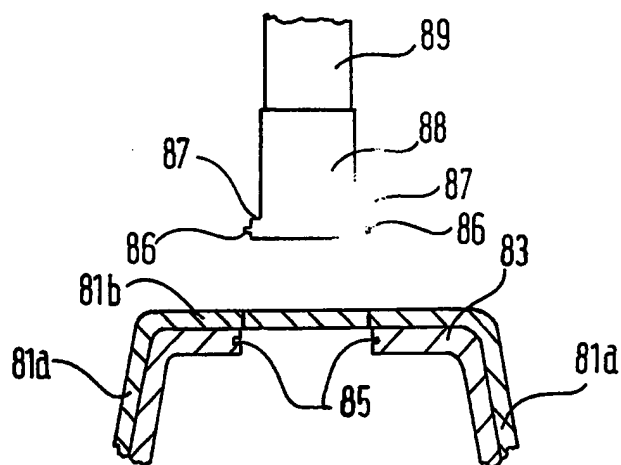


FIG. 11



## SPECIFICATION

### Riding saddle

- 5 This invention relates to a riding saddle and particularly to a saddle manufactured in polymeric materials by means of moulding processes.

The functions of a saddle are:

1. To distribute the weight of the rider over the lumbar muscles and ribs of the, say, horse and off its spine.

2. To support the rider in an effective riding position on the horse.

The traditional riding saddle consists of:

1. A basic frame, known as the 'tree', fabricated from laminated beech or similar wood, reinforced with steel and incorporating fittings for the location of the stirrup and girth straps, the stirrup fittings usually being bars. The whole unit is upholstered and covered with leather.

- 1a. The bars on which the stirrup straps hang are hinged so that, theoretically, in the event of a rider's foot becoming fast in the stirrup in a fall, the stirrup strap will be released. These bars rarely operate effectively.

2. Upholstered leather or linen covered panels which pad the underside of the tree and, extending down either side, form part of the sides of the saddle. This unit distributes the weight of the rider and offers protection to the horse.

3. Side flaps which cover the girth straps and buckles, protecting the rider's legs and complete the structure of the sides of the saddle.

4. Leather straps which, suspended from the bars of the tree, hold the stirrups. These straps are adjustable in length by means of a buckle.

5. Girths, usually of leather.

6. The stirrups, of metal, for the location of the rider's feet. There is a variety of stirrup designs available which are intended to overcome the problem of safety as described in 1a, none of which operates entirely satisfactorily.

- Thus the traditional saddle involves skilled, labour-intensive methods of fabrication in various materials, the structure being of a complex nature. The saddles produced in this way and in such materials are therefore expensive.

Hence problems of the traditional saddle as described above can be summarised as follows:

1. Expense - materials and method of manufacture.
2. Maintenance - re-upholstering, rotting of stitching, buckles ripping the leather, etc.
3. General daily care, which is time-consuming, is necessary.
4. Adjustment of stirrup and girth straps is not easy. The girth adjustment area is obscured by the side flaps and buckles are difficult to handle with one hand.
5. The safety aspects of the stirrup as already described.
6. The safety aspects of inadequate care and maintenance - for example, breaking of straps due to wear from buckles, general wear of leather and stitching, deformation of padding.

7. The inability of any given saddle to fit a range of different sized horses.

- Thus it will be seen that the traditional saddle has many inadequacies in its structure, manufacture and functional performance. It is clearly desirable, therefore, to produce a saddle of simpler construction which is cheaper to make and easier to maintain and with this objective in view there have been a number of prior proposals to replace the conventional materials by moulded plastics material. These proposals include the moulding of the saddle tree from plastics material and the moulding of a one piece saddle from foam plastics material. It has also been proposed to make a saddle having a tree seat moulded from fibre-reinforced plastics material, the tree seat being attached to a pad, e.g. of covered sponge rubber or hair-filled canvas, by means of outward projections from the seat that locate in pockets in the pad - see U S Patent 3,323,286. None of the prior proposals to replace conventional saddle constructions has been, so far as we are aware, particularly successful commercially and the present invention aims to provide a moulded construction that will be more readily acceptable and will overcome most if not all of the disadvantages indicated above of traditional saddles.

- Accordingly the present invention provides a riding saddle without a separate tree and which comprises a pommel, seat and cantle in the form of a solid substantially rigid integral moulding of polymeric material and a shaped padded panel of synthetic polymeric foam material, the moulding and panel having attachment means whereby they are releasably attachable together, the attachment means being located to be within the periphery of the underside of the moulding.

- Although solid, the rigid integral moulding may be either non-cellular or cellular and in the latter instance may be, for example, microcellular. However it is not intended to encompass a hollow shell whether empty or foam-filled.

- The integral moulding will hereafter be referred to as the saddle seat. It is preferably moulded from plastics material. It may be moulded from any suitable thermoplastics or thermosetting plastics material including polyurethane and nylon. It is preferably reinforced with fibres, for example, glass fibre or Kevlar (Registered Trade Mark), particularly in the front area or arch of the seat. Other reinforcing materials, e.g. woven fabrics, may be used if desired.

- The saddle seat may have a conventional shape and size with a raised portion (pommel) at the front and a similarly raised portion (cantle) at the rear with the waist and seat areas in between. It may be moulded, for example, by injection-, injection reaction-, vacuum-forming or compression moulding techniques or it may be built up on a suitable mandrel. The latter technique could typically comprise a glass-fibre and resin-spraying technique, itself well known in the plastics fabrication industry, followed by setting in an oven or cold curing.

- Where fibre-reinforcement of the saddle seat is required, suitable amounts of fibre can be readily determined by the skilled technician. By way of example only, a suitable range of amounts for glass

fibre is from 4 : 1 to 20 : 1 of plastics material : fibre by weight.

The means of attachment to the panel portion may be any suitable releasable mechanism. For example, a row of press-studs or a zip-type fastener or a fastener of the hook-pile fabric, e.g. Velcro, type may be used. Other means include a bar moulded into the seat with eyes for lacing, eyes, e.g. drilled, in the seat itself for lacing and a moulded flange fastener.

- 10 It is preferred that the attachment means extend along the longitudinal centre line of the saddle, i.e. corresponding substantially to the line of the horse's spine. Such an attachment means can ensure that lateral and longitudinal displacement between seat and panel do not take place to any significant degree and similarly that seat and panel do not separate vertically. (A degree of vertical displacement may, for example, occur at the rear of the saddle when the rider's weight comes down suddenly and then is removed again at the rear but that will be governed by flexing of the basically rigid seat portion at that rear part and will not mean that actual separation is taking place).

The attachment means may additionally or alternatively be positioned away from the longitudinal centre line up to the limit of being adjacent to the periphery of the seat.

- Attachment means that depend largely on means extending beyond that periphery are not desirable and do not achieve all the advantages that can accrue to saddles of our invention. Our invention provides a saddle not only having a number of important advantages, as detailed below, over a conventional saddle but also having important advantages over previously proposed saddles mounted from synthetic materials. In particular considerable versatility of fitting sizes is achieved by the saddles of the present invention. On the one hand versatility of fitting is achieved by the ability to separate the basic elements of the saddle - i.e. the seat and the padded panels - and interchange them. For example, from a basic sizes of each unit, a range of sixteen sizings may be possible. Moreover, should one of the elements be damaged and require repair, it may be substituted with another similar element so that no loss of use is incurred. On the other hand each combination of seat and panel by virtue of its unique construction as an attached unit, is capable of being adapted to a wider range of sizes or horse than are previously proposed saddles of either traditional or synthetic construction. This is basically because the resilient nature of the foam panel enables it to adopt its shape over a fairly wide range of horses' backs without harmfully affecting the attachment means between seat and panel. The panel absorbs the shape and size variation but the attachment means, since they are within the periphery of the seat, are not seriously affected, particularly where they extend along the longitudinal centre line which is well away from any areas of stress caused by compression or stretching of parts of the foam panel.

The means of attaching the attachment means to the seat and/or panel portion may be as follows.

- 65 Press studs may be moulded into the seat by

conventional metal insert moulding techniques and attached to the panels by, for example, stitching. A Velcro-type fastener may be added to the seat by, for example, an acrylic adhesive and its corresponding portion sewn to the panels.

- 70 The panel portion may comprise for example one, two or three units and is preferably padded with polyethylene foam, although rubber, flexible polyurethane foam or other inert polymeric foam padding materials may be used if desired. The surface of the foam may be profiled, especially that surface to be closest to the horse, for, inter alia, ventilation purposes. Thus in a preferred embodiment the panel is shaped to have a tunnel along its longitudinal centre line, this tunnel corresponding to the spine of the horse, so that the saddle, and thereby the weight of the rider, is kept from direct contact with the back of the horse immediately above its spine.

85 The covering material of the panel portion may be, for example, of cotton or nylon but other textile materials may be used if desired. The panel portion may be colour-coded to indicate, for example, saddle size.

- 90 In a preferred embodiment the covering of the panels is formed from two textile materials, the lower surface, i.e. that to contact the horse, being of an absorbent fabric, e.g. nylon-backed sheepskin, and the upper surface being of a non-absorbent fabric, e.g. a p.v.c.-backed fabric. In an alternative embodiment, the absorbent surface fabric is detachable to facilitate washing.

- The means of holding the girth and stirrup straps to the saddle seat may be, for example, effected by moulding in suitable locations for pins, bars or buckles in the required positions around or through which the straps may be passed. In an alternative embodiment, suitable recesses may be moulded into the saddle seat into which the receptacles for the above-mentioned fitting may be placed and held in position. The underside of the seat should be shaped to smooth out any sharp contour effect that the recesses would otherwise have so as to avoid discomfort to the horse. In another embodiment the strap attachment means may be in the form of a box which is moulded into position in the seat during making of the latter and padded with polyethylene foam. Alternatively a suitable box may be attached after the seat has been formed, e.g. by welding or rivetting.

The stirrup straps used with the saddle are preferably of a material such as polypropylene, polyethylene terephthalate or nylon webbing and may incorporate woven coloured stripes at regular intervals for the identification of the required length of adjustment. The nature of these materials permits the attachment of the stirrup by a welding process.

The girth straps are preferably of an absorbent textile material, e.g. cotton webbing, and preferably have an initial fixing device to be located under the horse's belly and to be operated prior to the adjustment at the pin/bar/buckle locations already described.

- 120 Although the straps may be held in position by standard self-locking buckles, a locking device of the

type described below with reference to the accompanying drawings may be preferred.

Also, although conventional types of stirrups may be used if desired, it is preferred to use a safety-type of stirrup. For example, the stirrup may be plastics moulding, e.g. of polyester or acetal resin, and may incorporate a safety release mechanism in the form of a pressure release flange. The release will depend on the stress applicable, therefore it will be necessary to provide a graded range of stirrups according to foot size and weight of rider. (The straps will also have to be changed if the stirrups are "welded" as mentioned above).

Thus the invention has simplified the structure of the saddle to its basic elements:

1. The tree/seat and strap locations-
2. The padded panels- and in preferred embodiments;
3. The girth and stirrup straps;

4. The stirrups

and has thereby provided considerable advantages over a saddle of traditional design. Maintenance is considerably reduced and problems of rotting or stitching and distortion of padding are eliminated. Cleaning and general care is made much easier by virtue of the new materials and structure. Versatility of fitting is achieved as discussed above.

The saddle is a safer product to use. By reducing the wear factors, equipment in a damaged state will be far less likely to be used - for example, stirrup leather (worn by buckles) breakages can be avoided and the padded panels, which will not easily deform, are therefore far less likely to incur soreness to the horse.

Specific embodiments of the invention are now described by way of example only with reference to the accompanying drawings in which:-

Figures 1A and 1B are diagrammatic representations of a saddle to indicate the terminology used to identify the various parts;

Figure 2 is a perspective view of one shape of padded panel formed as a one-piece unit;

Figure 3 is a perspective view of an alternative embodiment showing the panel shape of Figure 2 formed as a 3-piece construction;

Figure 4 is a perspective view showing an integrally-moulded saddle seat suitable for use with the panels of Figures 2 or 3;

Figure 5 is a view of a matching saddle seat and panel showing one form of attachment means;

Figure 6 is a similar view to Figure 5 but showing an alternative form of attachment means;

Figure 7 is a perspective view of a strap-locking device that may be used with a saddle of the invention;

Figure 8 shows the device of Figure 7 used to retain two straps;

Figure 9 is a view along line A of Figure 8 showing part of the article;

Figure 10 is a perspective view of part of a safety-release stirrup that may be used with a saddle of the invention, and

Figure 11 is an exploded and part-sectional view on line II-II of Figure 10.

The saddle of Figures 1A and 1B has a raised front

or pommel portion 1, a raised rear or cantle portion 2 and a central lower seat portion 3. Underneath the seat is the lining or panel 4 and a saddle flap 5 extends downwardly from each side of the saddle.

This flap in a conventional saddle may cover an extension 6 of the panel and the girth straps 7 and buckles will lie between the panel extension and the flap where they cannot be readily adjusted by a rider in the saddle. As will be apparent from the description of specific embodiments below, the straps

attached to a saddle of the invention can lie uncovered above the panel extensions or side flaps and hence are more readily accessible.

Figure 2 shows a moulded panel of foamed polyethylene. It has a portion 20 shaped to conform to the integrally-moulded saddle seat (see Figure 4) and two side flaps 21 and 22. Portion 20 has a raised rearward portion 23 corresponding to the cantle area of the saddle, a raised forward area 24 with two forwardly projecting shoulders 25 and 26 and a central seat area 27. The portion 20 is also shaped to have a central longitudinal tunnel (28) corresponding to the line of the spine of the horse. A recess 29 is provided on each side of portion 20 and extending inwardly from its edge, the recess being located to correspond to the position of the strap location means on the saddle seat (Figure 4). The side flaps 21 and 22 are integrally formed with portion 20 and each has a channel 30 to locate the straps, channels 30 adjoining recesses 29 at the boundary between portion 20 and the side flaps.

The moulded polyethylene foam panel may be covered with any suitable textile material as described above.

Figure 3 shows a similarly shaped moulded panel but this time formed in three separate parts, namely portion 20 shaped to conform to the saddle seat and separate side flaps 21 and 22. The three pieces can be contained within a suitable three pouch textile covering (not shown).

Figure 4 shows a substantially rigid, moulded glass fibre-reinforced saddle seat suitable for use with the panels of Figures 2 or 3. It has a raised forward pommel portion 31 of generally arched shape, a central seat portion 32 and a raised rearward cantle portion 33. A recess 34 on each side of the moulded seat corresponds to the recess locations of the panels. The back of the recess is provided with a slot 35 through which straps can be passed, this being one possible form of strap location means.

Specific attachment means between moulded seat and panels are not shown in Figures 2, 3 or 4 but are illustrated in Figures 5 and 6.

Figure 5 shows an alternative form of integrally-moulded saddle seat 40 having a raised cantle area 41, raised pommel area 42 and central seat area 43 with a recess 44 for the stirrup location means.

The matching integral foam panel 45 has a raised rear-portion 46, raised front portion 47, central seat portion 48 and side flaps 49 and 50. A channel 51 on each side flap corresponds with recess 44 on the moulded saddle seat.

The attachment means is in the form of press studs. A row 52 of studs 53 is stitched along the

longitudinal centre line of the panel 45. Towards the rear of the panel a further row 54 extends transversely on either side of row 52 and a further longitudinal row 55 extends from each extremity of row 54.

- 5 Corresponding rows 56, 57 and 58 of matching receiving studs (shown dotted) are moulded into the under surface of seat 40.

Figure 6 shows an alternative form of attachment means between saddle seat 40 and panel 45. Here  
10 rows 59, 60 and 61 of "Velcro"-type fastener are attached to the panel, again by stitching, and corresponding rows 62, 63 and 64 are adhered to the under surface of the saddle seat.

Figures 7, 8 and 9 illustrate one form of strap-  
15 locking device that may usefully be incorporated in a saddle of the invention. The device 70 is of size to locate in the saddle seat recesses such as 44 of Figures 5 or 6. It has a frame in the form of end plates 71 and 72 between which extend two pairs of  
20 knurled bars 73a, 73b and 74a, 74b. The upper bar 73a, 74a of each pair is movable towards and away from its fixed partner 73b, 74b respectively by virtue of being located by a pin 73c, 74c respectively in a slot 75 or 76 in each end plate. A strap 77 or 78 may  
25 therefore be introduced between each pair of bars and returned over the top of the upper bar 73a or 74a. By this means tension applied to the strap in a downward direction will urge bars together effectively trapping the strap between them.

30 Figure 8 shows the use of the device for a relatively narrow stirrup strap 77 and a relatively broad girth strap 78.

Figures 10 and 11 illustrate one form of safety-  
35 release stirrup that may be used with a saddle of the invention. The stirrup 80 is a plastics moulding in the form of a shell 81 having sidewalls 81a, a top portion 81b and a bottom portion or footrest, which latter portion is not shown. The sidewalls 81a, top portion 81b and footrest define a recess 82 for the rider's  
40 foot. Shell 81 has an internal reinforcing rib 83. A recess 84 is provided centrally of the length of top portion 81b, the depth of the recess from the edge 81c of the top portion being sufficient to reach rib 83. At its junctions with the recess 84, rib 83 is provided  
45 with a facing pair of locating slots 85. These are to receive the projections 86 of flanges 87 of a plastic end piece 88 attached by welding to a stirrup strap 89. The flanges 87 and projections 86 are designed to distort sufficiently under a predetermined load to  
50 pull out of slots 85 and hence release the stirrup.

In the embodiment illustrated in Figure 10 the stirrup strap has a colour coding indicated at 90 and 91 to signify its load rating and/or for strap length adjustment.

55

## CLAIMS

1. A riding saddle without a separate tree and which comprises a pommel, seat and cantle in the  
60 form of a solid substantially rigid integral moulding of polymeric material and a shaped panel of synthetic polymeric foam material, the moulding and panel having attachment means whereby they are releasably attachable together, the attachment means  
65 being located to lie within the periphery of the

underside of the moulding.

2. A riding saddle according to Claim 1, in which the integral moulding is of polyurethane reinforced with glass fibres.

- 70 3. A riding saddle according to Claim 1 or 2, in which the integral moulding is microcellular.

4. A riding saddle according to Claim 1, 2 or 3, in which the padded panel is of polyethylene foam.

5. A riding saddle according to any one of the preceding Claims, in which the attachment means extend along the longitudinal centre line of the saddle.

6. A riding saddle according to any one of the preceding Claims, in which the attachment means  
80 comprises a row of press-studs, a zip-type fastener of a hook-pile fabric type fastener.

7. A riding saddle according to any one of Claims 1 to 5, in which the attachment means comprises eyes provided in the seat for lacing.

- 85 8. A riding saddle according to Claim 7, in which the eyes are provided in a bar which is moulded into the seat.

9. A riding saddle according to any one of the preceding Claims, in which the panel has a tunnel along its longitudinal centre line whereby the saddle  
90 is kept from direct contact with the horse's back immediately above its spine.

10. A riding saddle according to any one of the preceding Claims, in which the lower surface of the panel is covered with an absorbent fabric and the  
95 upper surface with a non-absorbent fabric.

11. A riding saddle according to any one of the preceding Claims, in which the panel is colour-coded to indicate saddle size.

- 100 12. A riding saddle according to any one of the preceding Claims, in which locations for the stirrup and/or girth straps are moulded into the integral seat moulding.

- 105 13. A riding saddle according to Claim 1 substantially as hereinbefore described with reference to and as shown in Figures 2, 3 and 4 or Figure 5 or Figure 6 of the accompanying drawings.

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